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Conference on Disarmament

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Canada

Working paper

Questions to stimulate discussion of the elements of a treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices

Canada is firmly committed to the negotiation of a treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices (treaty) which would constitute an important contribution to nuclear non-proliferation and nuclear disarmament. We were honoured to have chaired the Group of Governmental Experts (GGE) which undertook the most in-depth discussion on aspects of a future treaty carried out to date. To facilitate this level of substantive discussion, the GGE operated on the basis of a policy-neutral and fact-based approach where no issue was left off the table. GGE experts were challenged by the Chair to respond to a number of questions designed to review the very issues and challenges that negotiators of a treaty might face.

These questions are compiled below to provide further transparency and insight on the work of the Group of Governmental Experts and to assist in stimulating further reflection on these issues beyond the group of 25 States that took part in the Group of Governmental Experts. It is our hope that these questions will assist all Conference on Disarmament delegations in preparing to engage in substantive discussions on a future treaty including during the upcoming schedule of activity discussions. More than ever, we remain convinced of the merit in broadening the Conference on Disarmament's perspective to include consideration of both political and technical aspects of its work. We believe this approach will stimulate greater engagement and understanding amongst Conference on disarmament delegations, which will in turn contribute toward a more conducive environment for the Conference to return to its mandated negotiating role.

I. Treaty Objectives and Basic Obligations

1. What should a treaty seek to achieve in terms of concrete effects?
2. What benefits would it provide to the international community?
3. How would it contribute to international peace and security?

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4. What would be the core functions of a treaty?

5. What should a treaty's impact be on non-proliferation, on nuclear disarmament and on nuclear security?

6. Should the objectives of a future treaty be concrete and quantifiable or rather, should they remain more general and aspirational (e.g., related to furthering nuclear non-proliferation and disarmament.)

7. How could a treaty encourage and advance nuclear disarmament? How could the structure of a future treaty (preamble language, support for separate protocols or phased approach) help in this regard?

8. Should a future treaty seek to assure the non-increase in the amount of fissile material available for nuclear weapons? How would such a goal be articulated in the treaty?

9. What implications might an objective seeking a non-increase in the amount of fissile material available for nuclear weapons have for material removed from nuclear weapons through future disarmament and dismantlement efforts?

II. Definitions

Fissile Material

1. What fissile materials should be defined in the treaty?

2. What existing definitions of fissile material are most relevant to the treaty? What would be the implications of using various definition proposals in the treaty?

3. What is the relevance of existing International Atomic Energy Agency (IAEA) material categories (special fissionable material, direct use material, source material, and alternative nuclear material) to a treaty banning the production of fissile material for use in nuclear weapons?

4. Which existing IAEA material categories most closely align to the possible objectives of a future treaty? Would it be necessary to expand or amend existing material categories in order to fulfil potential treaty objectives?

5. What are the main elements that can be used to distinguish existing options for defining fissile material in the treaty?

6. How can a treaty clarify the difference between fissile and weapons-usable material? Should special attention be paid to the "weapons-applicability" of different types of fissile material? Which fissile materials are most relevant from the perspective of weapons applicability?

7. In addition to weapons-applicability, what criteria should be used to assess the practicality of various approaches to treaty definitions (verifiability in terms of cost and confidentiality, non-discrimination)?

8. What are the implications of employing a "dialable" range of definition options for fissile material? How do experts see this working in practice?

9. Is there a need to address and or define materials used primarily for civilian purposes (such as reactor-grade plutonium and low-enriched uranium) in the treaty?

10. Should neptunium and americium be included in a treaty definition of fissile material? What implications would this have for treaty verification and existing IAEA safeguards? How would the exclusion of these materials affect their attractiveness for future nuclear weapons development?

11. Should the production of tritium for use in nuclear explosive devices be covered under a treaty definition of fissile material, given its use in modern nuclear warheads as a booster?

12. How might a future treaty incorporate a procedure so that definitions could be adapted in the future to account for technological advancements?

Fissile Material Production

13. Does a treaty need to define the term "fissile material production"?

14. What existing options for defining fissile material production are relevant to the treaty?

15. What are the most relevant technical starting points/thresholds for the production of fissile material (uranium, plutonium) for use in nuclear weapons or other explosive devices?

16. Should a treaty definition of fissile material production cover the entire nuclear fuel cycle related to the production of highly-enriched uranium and weapons-grade plutonium or focus on the specific activities where weapons-usability becomes most likely and practical (concept of technical choke points)?

17. Should a definition concentrate on the production activities that present the largest risks to treaty objectives?

Fissile Material Production Facility

18. Does a future treaty need to define the term "fissile material production facility"? If so, how can this be achieved?

19. How will a treaty definition of fissile material production activities be implemented in countries where there is a significant overlap between civilian and military production facilities? How could this challenge be addressed?

20. Are uranium enrichment and plutonium reprocessing plants the most relevant production facilities for this definition? What, if any, other production facilities could be subject to international verification under the treaty?

21. Does a future treaty need to define "shut down", "closed down" and "decommissioned" facilities? What is the relevance of existing IAEA Safeguards definitions in this context?

Other Definitions

22. Beyond fissile material, fissile material production, and fissile material production facilities, should a treaty define other related terms (i.e. existing stockpiles, nuclear explosive device, transfer, diversion, conversion, reversion, recycling of fissile materials, peaceful and military use)?

23. What would be the rationale for including these terms in a future treaty? What would be the implication of not including these terms for the effective implementation of a treaty?

24. What implications would different options for treaty definitions have on the NPT and the existing IAEA Safeguards Regime? Would the use of broader or narrower definitions in the treaty context negatively affect the integrity of IAEA Safeguards?

25. How can discussions on treaty definitions clarify key issues related to the treaty's scope and potential options for addressing existing stockpiles? Can agreement on certain treaty definitions help support productive discussions on scope?

III. Scope

1. In determining the treaty's scope, what impact do considerations related to national security, disarmament, and protecting proliferation sensitive information have?

2. If a treaty's objective were a non-increase of fissile materials for nuclear weapons, how would this shape the scope of a treaty? Would this influence other aspects of a treaty such as definitions?

3. How can various approaches to treaty scope be seen as meeting the Shannon Mandate criteria of non-discriminatory, multilateral, and internationally and effectively verifiable?

4. How may differentiated approaches to various categories of stockpiles help overcome divided positions on the scope of a future treaty?

5. Which functional categories of fissile material are relevant in determining the scope of a future treaty?

6. What are the implications if the treaty fails to distinguish between different categories of existing stockpiles?

7. In addition to existing stockpiles, what other issues related to treaty scope could usefully inform future negotiations on the subject?

8. Would measures related to transparency and control of stocks employed in nuclear weapons have value in building the trust and confidence needed to negotiate and implement the treaty?

9. What is the value and practicality of mandatory and voluntary commitments in this regard?

10. What approaches could be pursued with regard to the transparency of fissile material stockpiles in weapons? How can the treaty build upon transparency efforts undertaken in the NPT and other forums?

Civilian Production

11. Would the treaty include provisions related to the production of fissile material for civilian applications?

12. Does the potential diversion of civilian fissile material pose a significant challenge to the objectives of the treaty?

13. Should the treaty contain an obligation covering existing stockpiles of fissile material for civilian use?

14. Aside from a non-diversion obligation, what other forms could obligations addressing this category of material take?

Excess Materials

15. What role could measures to address fissile material declared in excess to military requirements play in ensuring that the treaty meets the criteria of irreversibility? Are such measures essential to a future treaty being a valuable contribution to nuclear disarmament?

16. How can excess fissile materials be defined in the treaty?

17. Should measures related to excess fissile material seek to advance legal irreversibility, practical irreversibility, or both?

18. What role could measures to address excess fissile materials play as part of a phased approach to the issue of existing stockpiles?

19. What approach could a future treaty employ for the declaration of fissile material in excess to military requirements?

Non-Proscribed Military Purposes

20. How could the production of fissile material for non-proscribed military purposes be addressed in the treaty?

21. What is the risk of fissile materials designated for naval reactors being diverted for use in nuclear weapons or other nuclear explosive devices?

22. Would the actual or perceived diversion of fissile material used in naval reactors to weapons programs by nuclear weapon possessing States undermine the non-proliferation and disarmament objectives of the treaty?

Materials from Future Disarmament Processes

23. How might a treaty address fissile materials removed from weapons through future disarmament and/or dismantlement processes? What verification challenges would arise?

24. Should a treaty include provisions related to the disposition of this material? Would disposition be voluntarily pursued by nuclear weapon possessing States or included as a binding treaty obligation?

25. Would there be any flexibility for such material to return to use in weapons programs? Would there be a need to define the specific purposes for which such material could be used once it has been removed from weapons?

26. Is there a difference in how a future treaty handles material made available from future bilateral disarmament efforts compared to future multilateral disarmament efforts?

27. What information could be provided in state declarations seeking to increase the transparency surrounding existing stockpiles? What challenges would nuclear weapon possessing States face in providing this information?

28. What value would the creation of a fissile material control initiative have in terms of transparency and accountability for existing stocks?

Implications for Verification and Definitions

29. What implications would various approaches to treaty scope have for the treaty's verification regime?

30. What are the verification implications of including certain categories of materials or production activities in the treaty's scope?

31. Should the treaty ensure that all activities within its scope are verified? What alternatives exist for the inclusion but non-verification of certain activities as part of the treaty's scope?

32. What are the challenges associated with requiring States possessing nuclear weapons to produce declarations of future production of civilian material for verification?

33. Are mandatory or voluntary declarations useful in this context and what form might they take? What would be the technical and verification challenges of such approaches?

34. What implications would various approaches to treaty scope have for treaty definitions? Are there additional terms that will need to be defined in a future Treaty on the basis of scope?

35. For non-nuclear-weapon States, is it possible that all obligations in the scope of a future treaty be covered by IAEA Comprehensive Safeguards Agreements (CSA) and/or additional protocols? If not what else might be required and in what circumstances?

36. What options might exist, voluntary or mandatory, for additional material or categories of material to become obligated under a treaty after entry into force? Should a treaty provide specific provisions for the negotiation of additional protocols?

IV. Verification

Objectives and Activities

1. What basic objectives should the treaty's verification regime seek to achieve?

2. Does the need to verify certain activities within the treaty regime vary according to its scope? Which activities should be verified under a future regime irrespective of a treaty's scope?

3. Is there a role for transparency and confidence building measures in this regard?

4. What specific activities should the treaty's verification regime seek to assess (no production for proscribed purposes at declared facilities, no diversion of fissile material to military explosive use, no undeclared production or facilities)? How will States measure the efficacy of verification? What level of assurance is required and how will this change over time? How can the political aspects of credible assurance be balanced with necessary technical considerations?

5. How do experts see the connection between the treaty's verification activities and States Parties' existing verification obligations?

6. What are the potential links between the treaty's verification regime and existing IAEA safeguards arrangements (CSA, additional protocols, voluntary offer agreement (VOA), item-specific agreements)?

7. Is the development of facility-specific verification tools and techniques compatible with non-discrimination principles?

8. How would a treaty operationalize the concept of irreversibility?

9. How might a treaty create provisions allowing non-obligated material to become obligated material in certain circumstances? How would this process become irreversible?

10. In the context of potential voluntary declarations of excess material, is it possible to create processes to nevertheless ensure the irreversible movement of these materials out of weapons programs?

11. Would this be verified? Are current verification techniques sufficient to assure compliance with a potential treaty provision in this regard?

12. If the treaty were to place binding obligations on parties to proceed with the decommissioning or conversion to peaceful uses of former military facilities, how could the irreversibility of these processes be operationalized within the treaty?

13. Might national decisions to decommission or convert facilities, even if not a binding obligation under a future treaty be subject to international verification as a means to ensure the irreversibility of these efforts? How might this be accomplished and what challenges would this pose for verification?

Verification Challenges

14. What technical and political challenges are linked to a future regime's ability to verify the absence of undeclared production or undeclared production facilities?

15. Does the treaty require specific verification approaches to identify and respond to cases of undeclared production at a declared facility as well as the existence of undeclared facilities?

16. Would the presence of undeclared facilities be considered a violation under the treaty or only if proscribed production activities take place at those facilities? What does this mean for how the treaty is verified?

17. What are the specific technical challenges related to conducting verification at different types of production facilities?

18. What are the most likely potential loopholes in the treaty's verification regime? Which of these is likely to pose the most significant threat to the verification regime's ability to provide credible assurances regarding compliance?

19. What connections exist between potential verification loopholes and concepts such as detection time, detection quantity, and detection probability?

20. What are the specific technical challenges related to conducting verification at different types of uranium enrichment facilities? Beyond challenges related to facilities with the legacy of weapons production, which others are relevant?

21. What verification measures are required to verify the non-diversion of excess fissile material back into weapons programs? What specific challenges exist for the implementation of these measures?

22. What technical and political challenges are related to the verification of non-diversion of fissile material from non-proscribed purposes? Does this require any specific considerations beyond those in place for uranium enrichment and plutonium reprocessing facilities?

23. How could non-diversion of non-proscribed military production of fissile material, including for naval reactors, be assured? What specific approaches could be employed?

24. Is verification of such material possible? What would be the verification challenges? How might they be overcome? How would a future treaty address national security and proliferation sensitive information?

25. What mechanisms would be required to provide the international community with credible assurances that fissile materials used in naval reactors are not being diverted?

26. Is it feasible to develop new verification technologies for material in military facilities?

27. How should the treaty's verification regime seek to provide credible assurances that no diversion of civilian material to weapons-use in nuclear-weapon States or non-NPT States is taking place? What form could this obligation take? What would be the relevant verification tools for such an obligation?

Verification Toolbox

28. What specific tools and techniques would be most suitable for the treaty's verification toolbox?

29. Would existing IAEA tools (i.e. routine inspection, containment and surveillance, material accountancy, managed access, design basis information etc.) require adaptation to function under the treaty? Could these tools be adapted for an independent 'FMCT' agency to detect undeclared production and verify non-production?

30. What verification tools could be developed to verify undeclared fissile material production or facilities in nuclear weapon possessing States? Given national security and proliferation concerns, what are some practical methods for the international community to develop verification tools in this regard?

31. Are there verification challenges under a treaty that existing tools and techniques could not address? How might these challenges be addressed?

32. Could Voluntary Offer Agreements (VOA) or facility-specific safeguards between nuclear-weapon States and the IAEA be used to ensure effective verification of civilian material in those States?

33. Do the legal provisions and obligations contained in existing IAEA safeguards arrangements have relevance for different components of a future treaty's verification regime (i.e. verifying specific scope approaches, overcoming specific verification challenges)?

34. Do provisions contained within the additional protocols help provide essential information about nuclear activities in States Parties that would be needed to verify compliance with the treaty?

35. Should the treaty employ existing IAEA verification criteria such as detection time, detection probability and detection amount (significant quantity)?

36. What relevance does the IAEA's existing use of containment and surveillance as well as environmental sampling have for treaty verification? What is the relevance of IAEA material accountancy and design information verification techniques?

37. Will the treaty's verification regime rely on one or two core verification techniques or will it, like current IAEA practices, rely on a mixture of tools? What lessons learned from IAEA practices may be relevant in this regard?

38. What are some of the specific verification tools that exist, or could be developed, for each of the fissile material definition categories?

39. How might a risk-based approach to verification be operationalized, in practical terms, within the treaty? What are the implications of using "heavy" and "light" touch verification techniques? What are potential 'different levels' of verification for monitoring adherence to treaty obligations?

40. How might a cooperative approach to verification being operationalized, in practical terms, within the treaty? What Organisation for the Prohibition of Chemical Weapons (OPCW) and Comprehensive Nuclear-Test-Ban Treaty Organization verification regime approaches would be most suitable in developing a cooperative verification approach under a treaty? Can these approaches be used to develop specific verification tools and techniques under the treaty, or are they best reflected in a verification agency's general procedures?

41. In terms of non-discriminatory verification, is it possible for the treaty to establish a constant baseline approach (i.e. through a common verification toolbox and a cooperative

approach to verification) applicable to all States? What would be the verification challenges of such an approach?

V. Institutional/Legal Issues

Institutional Issues

1. What are the advantages and disadvantages to having an independent FMCT Organization/Secretariat conducting core treaty-related decision-making, including on issues such as non-compliance and resource allocation?

2. Regarding a possible FMCT Organization/Secretariat, in a scenario where it was independent from a verification body (IAEA or other), what are some of the main options for its structure? What would its mandate involve? What would be a suitable size? What type of arrangement would be required to formalize the relationship between this governance body and a verification body?

3. In a scenario where an FMCT Organization/Secretariat itself takes on verification responsibilities, what options exist for its structure and responsibilities?

4. What challenges do experts anticipate with respect to the potential establishment of an executive council and conference of State Parties? Who would participate in these entities? How would they function in practice?

5. Which elements of the treaty's verification regime should be outlined in the treaty itself as opposed to those which should be established through subsequent agreements arrived at between the verification body and States Parties?

6. If the IAEA were not to play a role in treaty verification, what would be the implications of an FMCT Organization/Secretariat or other independent verification agency using IAEA safeguards data in carrying out verification activities and ensuring compliance with an FMCT?

Legal Issues

7. What options exist for dealing with questions of non-compliance under the treaty? How could these be adapted in an FMCT context to ensure the treaty's credibility? Should technical procedures be developed? If so, how could the inevitable political context in such scenarios be taken into consideration?

8. What are the implications of requiring non-nuclear-weapon States to have implemented both a CSA and/or an additional protocols with the IAEA? How would this obligation be formalized, in practical terms, in the text of a future treaty so that adherence to these agreements constitutes compliance with an FMCT?

9. What would be the relevance of Voluntary Offer Agreement (VOA) or facility-specific type agreements for nuclear-weapon States under the treaty?

10. What is required for the treaty to maintain the flexibility required to adapt to future changes in the global strategic context?

11. In order to achieve a non-discriminatory scope, should the treaty apply the same basic legal obligations to all States? What are the consequences of such an approach?

12. Are additional elements necessary in order to achieve non-discrimination? What would these consist of?

13. Can the goal of non-discrimination be achieved through differentiated verification approaches applied to different categories of States (those with nuclear weapons, those with advanced nuclear capabilities, etc.)?